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PREHISTORY OF THE SOUTHERN PLAINS

Julia Anne Jordan

The history of the Southern Plains began in 1541 when Coronado marched his band of Spanish mercenaries across northeastern New Mexico, the Oklahoma Panhandle, and western Kansas in search of the golden kingdom of Quivira. After months of hardship he reached Quivira but he found no gold--only poor Indians living in straw houses, raising corn, beans, and melons. He left records which tantalize us with fleeting descriptions of nomadic hunters in the western bison plains. These Indians subsisted on the meat of the Plains cattle and had "no other settlement or location than comes from travelling around with the cows." (Wedel, 1941)

Here, then, is the first glimpse through European eyes of the Indian tribes of interior North America. The picture, as indicated by the early Spanish records, is dim and hazy, but it gets brighter and clearer as we move toward our time and the records increase in number and authenticity. Written accounts do not exist to shed light on events before Coronado, yet events transpired on the Southern Plains. For thousands of years before 1541 peoples moved about this region, migrating to new homes, gathering wild foods, and stalking big game. The reconstruction of the prehistory of this area is primarily the task of the archeologist, with perhaps a guiding hand from the historian and the geologist. The object of this paper is to explore briefly the prehistory of the Southern Plains as it may be gleaned from archeological data and the theories of experts who have worked with this material.

Since a history makes more sense when it begins at the beginning and moves forward through time, I shall leave Coronado in Quivira and commence with the earliest known inhabitants of the Southern Plains. In an attempt to organize this prehistory into convenient and contiguous segments, I shall use the culture-time sequences of Suhm and Krieger (1954) and discuss Paleo-American, Archaic and Neo-American horizons respectively. But before we take up the early bison hunters--the Paleo-Americans--let us examine the setting, the Southern Plains.

Definition of the Southern Plains

Without going into geological or geographical particulars, the Great Plains of the United States is a high grassy region sloping gently eastward from the base of the Rocky Mountains. East of the 99th meridian, which bisects the states of Texas, Oklahoma, Kansas, Nebraska, and the Dakotas, the high short grass plains give way to the true prairies or tall grass country. These in turn merge gradually into the parklands and woodlands of the Mississippi Valley. The Great Plains sweep, without interruption, from Mexico northward through Canada.

Kroeber (1947) suggests that the natural and ecological boundary between the Northern and Southern Plains lies at Pike's Peak, just north of the headwaters of the Arkansas. Since this is a convenient dividing line I shall consider the Southern Plains to be that part of the Great Plains lying south of the Arkansas River, including the Llano Estacado. Let us now look at the Southern Plains in particular, beginning with the northwestern border. In northeastern New Mexico and southeastern Colorado the Sangre de Cristo Mountains rise steeply from the high short grass plains. The major rivers of the Plains trace their source to the snows in these peaks, among them the Pecos, the Red, the Canadian, and the Cimarron. The northern boundary of the Southern Plains, the Arkansas, rises in the north in the high front range of the Colorado Rockies. These streams flow east, southeast, and south through broad flat-floored valleys in a land characterized by incredibly flat monotonous short grass plains. The northern part of this region is gently undulating and uneven, but much of the area in the Texas and Oklahoma panhandles is as level and featureless as it is possible for land to be. Nevertheless, certain topographical features exist.

Dividing the Texas Panhandle from north to south is the so-called "break of the plains" where the high barren steppe called the Llano Estacado juts out on the grassy well-watered plains to the east, 700 to 1200 feet lower. The Llano Estacado, or Staked Plains, extends for miles into eastern New Mexico, and to the south it merges with the Edwards Plateau of south central Texas which forms the southern boundary of the Plains.

In modern times rainfall decreases from about 40 inches in wooded eastern Oklahoma, Texas and Kansas to about 15 or 18 inches in the western high plains. Before encroaching whites upset the balance of natural vegetation, the high plains were dominated by short buffalo and grama grasses, with yucca, cactus and sagebrush abundant in some areas. The valleys contained groves of hackberry, cottonwood and willow, along with some elm and ash. Thickets of wild plum, elderberry, and other edible native plants were scattered along ravines and stream valleys. In northeastern New Mexico stands of juniper and pinon appear on the valley rims. Native to the Southern Plains in 1541 were bison, antelope, mule deer, prairie dog, coyote, jack rabbit, badger and various other small game animals and game birds, including prairie chickens, grouse, and turkeys.

Introductory Discussion

The interpretation of the Plains as a culture or geographical area has varied considerably with the men who have studied this region. When anthropologists first turned to the organization of American Indian data they found the Plains area characterized by a vigorous, rapidly expanding, highly specialized way of life which had not yet faded from the memories of living tribes. Because Plains culture of the 18th and 19th centuries was so distinctive and rich, so peculiarly adapted to nomadic hunting life, and so uniform from Texas to Canada, it was only natural to assume this state extended back into prehistoric times. When

archeologists at last began to focus attention on the scant materials in the Plains (scant compared to Southwestern and Ohio Valley regions) it became apparent that the Plains had been anything but a cultural center in prehistoric times. In fact, it soon became obvious that the Plains were a kind of cultural backwash where the inhabitants, if any, persisted in time-worn hunting and gathering ways of life, rippled only occasionally by waves emanating from the developing centers of the Mississippi Valley and Southwest.

Wissler classified the Indian cultures east of the Rockies into Plains, Eastern Woodlands, and Southeast culture areas (Eggan, 1952). Working from the vantage point of late Plains institutions and in the absence of archeological data, he came to view Plains culture as an areal development, with specialization taking place in the center of the area and diffusing to the margins. In his opinion Plains culture was essentially timeless, and the introduction of the horse merely intensified patterns already in existence. Kroeber dissented strongly. He viewed the High Plains as a marginal area throughout prehistoric times, almost destitute of inhabitants, with a few groups drifting in intermittently from the Mississippi Valley or Rocky Mountains. Referring to the Plains Kroeber said:

Essentially the view held is that the Plains culture has been one of the well-developed and characterized cultures of North America only since the taking over of the horse from Europeans, and that previously there was no important Plains culture, the chief phases in the area being marginal to richer cultures outside. In brief, the historic Plains culture was a late high-pressure center of culture in a region which previously had been rather conspicuously low-pressure. (1947)

Since Kroeber's analysis seems both logical and consistent with the archeological and historical data now available, I propose to follow his lead and view the Southern Plains as a marginal area throughout most of its history. Wissler's culture area concept gives scope but not depth to the picture of native cultures in the 19th century. The same scheme, applied, say, one thousand years ago must have surely resulted in a different picture. Let us keep in mind, then, that throughout most of the prehistoric times the Southern Plains was a peripheral area.

The Paleo-American Horizon

The earliest known cultures of the Southern Plains are the Sandia, Clovis, Folsom, Plainview and Scottsbluff complexes, all of which have been found in association with large extinct Pleistocene mammals. Remains of these ancient cultures have been found in many areas of this region where erosion has exposed Pleistocene deposits. Paleo-American artifacts are rare because Paleo-Americans themselves were few in number, and also because the imperishable remains that do exist are likely buried under later geological deposits. Projectile points are the most

characteristic artifacts of these complexes, and some of them are among the most beautifully chipped tools in the world. As a rule, Paleo-American points are quite distinctive in shape and exhibit high quality workmanship.

The Paleo-American horizon extends from the very earliest occupation by man--say, 20,000 or 25,000 years ago--to the end of the Pleistocene era. The last full glaciation of this epoch probably reached its climax about 11,000 years ago (Suhm and Krieger, 1954) and the characteristic Pleistocene mammals such as mammoth, mastodon, saber-toothed cat, native American horse, camel, giant sloths, giant wolf, large bison, etc., became extinct everywhere by 5,000 B. C. By this time the long dry Altithermal Age set in, burning up the grass on which the large grazing animals subsisted, and hastening them and their predators toward extinction. Some species, notably the large bison, undoubtedly lingered on in certain favorable sections of the Southern Plains.

The Folsom Complex (Wormington, 1956)

The Folsom complex is known from several excavated sites in the Southern Plains, including Folsom, New Mexico, Lubbock, Texas, Clovis-Portales, New Mexico and the Lipscomb Site in Texas. The Lindenmeier Site, while not within the Southern Plains region, provides much of our knowledge about this culture. The Folsom fluted point is the characteristic artifact of this complex, being finely made with long channel flakes removed from both faces and "dog ear" projections at the base. Folsom points recovered from excavations are generally associated with extinct bison bones. Other artifacts of this complex include snub-nosed scrapers, end scrapers, channel-flake knives, and chipped knives. Radiocarbon dating at the Lubbock Site has produced a date of 9,883 years ago, correlating nicely with previous geological estimates of age.

The Clovis (Llano) Complex (Wormington, 1956)

This assemblage is known primarily from kill sites exposed in "blow-outs" in the Llano Estacado and elsewhere in the Southern Plains. In every case the Clovis materials are found associated with extinct mammoth. At the Clovis-Portales series of sites in eastern New Mexico, Clovis remains have been found underlying Folsom material, suggesting a greater antiquity for Clovis--at least in this region. The characteristic Clovis artifact is also a projectile point, known as Clovis Fluted, and in many ways it resembles the Folsom point. It is larger, cruder, and perhaps more generalized than the Folsom point, and the fluting on Clovis points occurs mainly at the basal portion of the point. Clovis points are distributed all over the country, and this fact, as well as the generalized point form, suggests that the Clovis assemblage may represent a very early hunting culture which spread out widely over the United States, perhaps evolving into Folsom in the Southern Plains where big game hunting produced a specialization. Some fluted points, perhaps related to the Clovis tradition, have been excavated from sites in the East, notably the Shoop Site in Pennsylvania and the Bull Brook site in

Massachusetts. Nowhere east of the Plains have they been found in association with extinct animals, though this fact does not argue against their antiquity in the East. There is every reason to believe these animals survived to a comparatively recent date in the Southern Plains and Southwest. Antevs estimated the age for the Clovis assemblage as 13,000 years ago.

The Sandia Complex (Wormington, 1956)

The oldest of the Paleo-American assemblages yet known is the Sandia assemblage, known primarily from excavations in Sandia Cave and the Lucy Site, both in central New Mexico. The Sandia culture may well be 20,000 years old, judging from geologic correlations of the strata in Sandia Cave, and the typical artifacts are associated with extinct horse, camel, mammoth, and bison. Again the characteristic artifact is a projectile point, the Sandia point being a one-shouldered asymmetrical point with squared or rounded shoulder. No sites are known for Sandia in the Southern Plains, but the appearance of occasional Sandia points in surface collections from the Texas Panhandle (Suhm and Krieger, 1954) points to the possibility that Sandia hunters, too, roamed the plains.

The Plainview Complex (Wormington, 1956)

The characteristic artifact of this complex is a projectile point similar in shape to Clovis points, but without fluting. These points have been found in association with extinct bison remains near Plainview, Texas. Radiocarbon dates of 7,100 and 9,170 years ago confirm their estimated antiquity.

In addition to the above complexes, points of the Scottsbluff, Eden and Angostura types have been collected from the surface of the Texas Panhandle, all of which represent Paleo-American groups which have been found associated with extinct animal forms in other regions. Manos and milling stones of estimated Paleo-American antiquity have been found in Texas, indicated these people made use of wild foods.

Folsom, Clovis, Plainview and Scottsbluff points have also been picked up in western Oklahoma in places where erosion has exposed old deposits. The Nail Site (Baker, Campbell and Evans, 1957), a blow-out in the Oklahoma Panhandle, has yielded Clovis and Folsom points, but is especially rich in Plainview, Meserve, Milnesand and Angostura points from later Paleo-Indian assemblages. Other cultural stages also appear to be present here. Some stemmed and side-notched dart point from the site may indicate an Archaic occupation, while arrow points, knives and other artifacts similar to Panhandle Aspect materials most certainly point to a Neo-American stage here. Controlled excavations at this site might greatly aid in interpreting the prehistory of this region.

In addition to the various lithic evidences of Paleo-Americans on the Southern Plains, parts of a human skull have been excavated near Midland, Texas from very old sand formations. Fluorine analysis of the

skull shows it was contemporaneous with Pleistocene animals in the same deposit, mainly horse (Suhm and Krieger, 1954). In a nearby blow-out Folsom artifacts were recovered from geological deposits much later than those in which the human bones were found. The Midland skull fragments may be the best authenticated skeletal material of a Paleo-American individual yet discovered.

Generally speaking, the Southern Plains and Southwest have more sites and remains of Paleo-Americans--especially in association with extinct Pleistocene animals--than any other section of North America. Whether this is due to a concentration of the Paleo-American population in the Southern Plains or to the discovery of more Paleo-American sites in this area as they are revealed by erosion, cannot be said. However I am inclined to hypothesize that the Paleo-American horizon, as manifested in the Southern Plains, was a big game hunting specialization of a more generalized ancient hunting and gathering tradition which spread over the whole continent before 8,000 B. C. The fact that the Folsom, Plainview, Eden and Scottsbluff type points are highly distinctive, exceptionally well made artifacts found only in the Plains points to this conclusion. Also, it is now apparent that large Pleistocene animals survived into comparatively recent times in the Southern Plains. These animals--bison and mammoth, particularly--were finally brought to extinction by the advent of the dry Altithermal age which set in about 5,000 B. C. The remnants of the great herds straggled northward on the High Plains, seeking forage, followed in their migration by the ancient hunters. With the disappearance of the large herds from the Plains, the transition from Paleo-American to Archaic times set in.

The Archaic Horizon

As delineated by Suhm and Krieger in 1954, the Archaic stage is a transition from the Paleo-American hunting complexes to the settled agricultural, pottery-making Indians. This period might be considered to extend from 4,000 B. C. to 1,000 A. D. in Texas, and, by extension, throughout the Southern Plains. The subsistence of Archaic groups depended upon both hunting and gathering, and also upon fishing. Chipped stone artifacts began to appear in greater numbers and variety, particularly dart points and scrapers. None had the excellence of workmanship or the distinctive forms of the Paleo-American flints, however. Other artifacts characteristic of the Archaic horizon in general are manos and milling stones, polished stone pendants, atlatl weights, tubular beads, and tubular pipes. Domestic dogs probably spread over the country in Archaic times. Dwellings were very likely rude brush shelters or simple lean-tos; archeological evidence of them is practically impossible to find. Burial of the dead was usually in flexed position without grave offerings.

Several Archaic cultures have been defined for peripheral areas of the Southern Plains, among them the Grove and Fourche Maline foci of Oklahoma, the Carrollton and Elam foci of north-central Texas, the Edwards Plateau Aspect of central Texas, and the Hueco Phase and Big Bend Aspect of the Trans-Pecos area of Texas.

The Grove Focus (Bell and Barreis, 1951)

The Grove materials are probably related to the Ozark Bluff Dweller materials of southwestern Missouri and northwestern Arkansas, and may be 5,000 years old. Some of the preceramic occupational deposits are 12 feet thick, indicating a very long habitation. Sites are generally located beside rivers and streams, or in caves and bluff shelters. Artifacts include several kinds of roughly-made projectile points, crude scrapers and choppers. The Grove people probably possessed coiled basketry, baby cradles and matting as did the Ozark Bluff Dwellers, but this material could not survive in the open sites in Oklahoma.

The Fourche Maline Focus (Bell and Barreis, 1951)

South of Grove, in east central Oklahoma, the Fourche Maline people left village debris and refuse deposits along stream banks. Pre-pottery traits include flexed burials, post holes but no houses, large crude projectile points, knives, drills, scrapers, and double-bitted axes. Other artifacts are celts, ground axes, pendants, gorgets, boat-stones, atlatl weights, beads, grinding stones, hammerstones, etc. Bone objects are represented by projectile points, awls, bodkins, atlatl hooks, flaking tools, fish hooks, whistles, beads, and perforated animal teeth. This is the earliest horizon known for east central Oklahoma and it lasted a long time. Pottery was acquired in later times, but affected the general way of life very little. The earliest manifestations of Fourche Maline are probably Archaic, both in character and time, but are later than the early Grove materials.

The Carrollton and Elam Foci (Suhm and Krieger, 1954)

In Texas the Elam and Carrollton Foci comprise the Trinity Aspect of north central Texas. This aspect is known primarily through test trenches and surface collections made in the upper Trinity River valley, and is apparently related to Archaic cultures in east Texas and to the Edwards Plateau groups to the south. The Carrollton people left small campsites along river terraces and were probably dependent upon hunting and gathering for subsistence. Characteristic of this complex are several varieties of dart points, including the crude prominent-shouldered Carrollton point, crude quartzite choppers, and scrapers with steeply beveled bits, gravers, drills, crude triangular knives, and a distinctive roughly-chipped double-bitted ax. Ground stone artifacts are "Waco sinkers"--round stream pebbles notched at each end--and manos and milling stones showing rotary motion. So far there is no evidence of polished stone and bone objects, burials, houses, etc. Crook and Harris have reported a radiocarbon date for the Carrollton Focus of 5,945 years ago, plus or minus 200 years (1959).¹

The Elam Focus is closely related to the Carrollton, though the dart points are smaller and no "Waco sinkers" have been found. It is probably a later manifestation than Carrollton.

The Edwards Plateau Aspect (Suhm and Krieger, 1954)

The Edwards Plateau region of south central Texas offers some interesting food-for-thought since a number of Paleo-American artifacts have been recovered from sites yielding large quantities of Archaic material. Although in a small minority, the older projectile points are present in large enough quantities to cause a considerable amount of theorizing about the relationship of the Paleo-American to the Archaic stage. Especially numerous are Plainview, Angostura, and other lanceolate points of yet untyped categories.

Sites of the Edwards Plateau are characterized by huge mounds made up of burned and broken pieces of limestone. Evidently the Indians who camped here used to line their hearth pits with limestone slabs which cracked under heat, were thrown out, and then replaced with new slabs. The mounds formed from the discarded hearth stones are thus actually "burnt-rock middens," and they contain great numbers of flint artifacts, cracked animal bones, mussel shells, and occasional burials between layers of rocks. From the tremendous size of the middens they are features of permanent camp sites, and were occupied continuously for hundreds of years. Possibly the Edwards Plateau peoples wandered surrounding areas hunting and gathering wild foods, returning to these permanent camps for part of the year. Hundreds of these sites are known. Age estimates for this aspect run as far back as 4,000 or 5,000 B. C. to 500 or 1,000 A. D.

The Edwards Plateau people depended upon both hunting and food-collecting for their livelihood. The main food animal was deer, but bison were also utilized, as well as various small mammals and birds. Chipped stone artifacts include a wide variety of dart points, graters, "Clear Fork" end scrapers or gouges, several kinds of scrapers and knives, crude percussion-chipped axes, choppers, drills, and all kinds of flint chips and cores. The ground stone artifacts consist of one-handed manos, milling stones with oval depressions, and large egg-shaped pipes. Still other materials are polished stone pendants and boat-stones, bone awls, antler and bone flaking tools, red and yellow ochre pigments, sandstone and limestone hones, shaft abraders, flat limestone "tablets" with finely incised lines, hammerstones, sinkers and "Waco sinkers." The few burials which have been found are single and flexed, with few or no grave offerings.

The occurrence of significant numbers of Paleo-American projectile points, particularly the Plainview and Angostura types, has led to conjectures as to whether Paleo-Americans might have survived in this area after the disappearance of the large Pleistocene game animals, and continued to manufacture their points as they had done previously. A more likely possibility is that the Archaic stage began much earlier than had previously been suspected--perhaps around 5,000 B. C. There is a pressing need for radiocarbon and geological dating in this area to shed new light on this problem. I suspect that the long-held dichotomy between Paleo-Americans and Archaic peoples is not valid. As radiocarbon

dates begin to push back the Archaic horizon for the Mississippi Valley and eastern United States, it may become evident that the Archaic peoples existed side by side with the so-called Paleo-Americans. The peoples designated as Archaic, however, did not adopt the "Plains Culture" of 8,000 B. C., typified by the Folsom big game hunters. Instead they lived a more unspectacular and generalized kind of hunting and gathering life outside the High Plains, with localized culture variants, never developing the specialized lithic industry of the Plains people. When the Altithermal Age set in and the great herds disappeared, the Plains dwellers were forced into another type of life. Some drifted north following the dwindling herds; others left the High Plains for the peripheral prairie and woodland areas where they either lapsed into conventional Archaic patterns or became amalgamated with existing Archaic peoples. Such an amalgam--a small proportion of Plains Paleo-Americans with a much greater proportion of peripheral Archaic people--is suggested by the consistent occurrence of Paleo-American points in the Edwards Plateau sites.

Other Archaic groups peripheral to the Southern Plains are the Hueco phase and the Big Bend Aspect of the Trans-Pecos area in extreme southwestern Texas. These cultures appear to be later than the Edwards Plateau Aspect, and are possibly related to it, though some basketry and otherwise perishable remains recovered from cave sites may indicate a connection with the ancient Cochise culture of the Southwest desert tradition. At any rate, an examination of these complexes is beyond the scope of this paper.

The Kenton Cave Culture (Bell and Barreis, 1951)

Within the borders of the Southern Plains is an old culture known from cave and rock shelters in the Oklahoma Panhandle, near Kenton. Dr. E. B. Renaud, then with the University of Denver, excavated 3 caves near Kenton in 1929, finding materials representing a simple semi-nomadic hunting people, with indications for considerable antiquity. As in all dry caves, artifacts were better preserved than in open sites, and some otherwise perishable materials were found. In the cave shelters Dr. Renaud found basketry, fur, seeds, wood and vegetal matter, quantities of animal bones, acorns, fruits, berries, and also squash and corn. Two pairs of yucca leaf sandals, both square-toed and round-toed, were found. Perishable artifacts were a dart foreshaft, wooden tube, fire drill, pointed sticks, parts of a snare, some string and cordage, several types of basketry, and a spearthrower. Awls and beads were also recovered. There were some metates of irregular shape with oval grinding basins, small manos, quartzite scrapers, knives, choppers and punching tools. The fact that no pottery, grooved axes, or polished stone or finished projectile points were found suggests considerable age. Bell and Barreis indicate the Kenton cave materials may be contemporaneous with the later Grove and early Fourche Maline cultures, but at yet no date has been suggested. Renaud thought these materials might represent a very early Basket Maker culture which survived in the Anasazi periphery. For the present, however, their origin and affilia-

tions remain obscure.

Elsewhere in the Southern Plains proper no cultures or foci have been defined for the Archaic horizon, yet Archaic sites have been located in great numbers in the Texas Panhandle (Hughes, 1955). A survey conducted by the Panhandle-Plains Historical Museum in 1952 revealed many Archaic sites in the Llano Estacado area, though so far none have been excavated. One of the most promising sites is the Little Sunday site south of Palo Duro Canyon, where many dart points, scrapers, choppers, knives, key-shaped drills, graters, and occasional Clear Fork gouges have been collected from the surface. Milling stones with oval basins and manos of sub-rectangular outline are also present. Most of these Panhandle sites are small open camps on canyon rims, with remains of hearth rocks and pebbles used for stone boiling scattered about. Nothing is yet known of houses or burials. Much work can be done in this area and no doubt controlled excavations will reveal important information about these Archaic peoples. That these sites may be classed within the Archaic stage is shown by the fact that ages for the 2 dominant dart point forms are estimated by Suhm and Krieger (1954) at from 2,000 B. C. to 1,000 A. D. Pottery, arrow points and double-pointed alternate-beveled knives--characteristics of later Plains cultures--do not occur on these sites.

The Neo-American Horizon

The beginning of the Neo-American horizon is difficult to date as it emerged gradually from the later stages of the Archaic. The principle criteria for determining the Neo-American stage are agriculture, pottery, and the bow and arrow (Suhm and Krieger, 1954). Agriculture appeared in late Archaic times among some peoples, as did also the bow and arrow; nevertheless these traits do not characterize the great bulk of the Archaic period while they are almost universal in Neo-American times. The relationship of pottery to agriculture, and the origin of both, are not yet understood. Certainly they appear very early in both Mexico and the Mississippi Valley. Disregarding the cultures in extreme south Texas, it is generally believed that both agriculture and pottery disseminated to the Plains from the Mississippi Valley. By Coronado's time they had reached the Rockies, there, perhaps, to mingle with agricultural and ceramic traditions emanating from the Southwest. Both agriculture and pottery, of course, occurred much later in the Plains than in either the Mississippi Valley or the Southwest; consequently the small hunting and gathering groups which lived on or near the Plains lingered on in an Archaic condition for hundreds of years after Ohio Valley and lower Mississippi groups had entered the Early Woodland stage around 500 B. C.² Sufficient data to trace the transition from Archaic to Neo-American phases on the Southern Plains are lacking. As yet it may be argued as to whether the transition came when agriculture and pottery diffused from Woodland groups to long-time residents of the Plains, or when groups of Woodland peoples actually migrated to the Plains, bringing these traits with them.

Very likely the Neo-American stage came in as sporadic migrations of eastern Woodlands groups moved west, following the easily-tilled river and stream valleys. A slow but ever-accelerating increase in population in the east, a direct result of an agricultural economy, could have triggered these migrations westward. Or perhaps the added attraction of buffalo hunting lured these emigrants from the Woodlands. At any rate, a radiocarbon date of 800 years ago, plus or minus 150 years, for a Washita River site in Central Oklahoma would indicate the Neo-Americans were already well established in their gardening and hunting culture by 1160 A. D.³

The Neo-American horizon as we have pictured it, therefore, covers everything from the end of the Archaic period to contact with white civilization. Thus we are lumping into one category the culture-time stages which, for the eastern United States, have been designated as Early, Middle and Late Woodlands and Early and Late Mississippi (Griffin, 1952). This is a much more convenient procedure for several reasons. First the Archaic way of life persisted longer in the Plains than in the Mississippi Valley. Furthermore, the elaborations of culture found in the large, heavily populated cultural centers of the East--earthworks, burial mounds, art objects, complex ceremonial organization, political and trading centers--are all lacking on the Plains. The differences between Early and Middle Woodlands and Mississippian stages are scarcely discernible in the Plains except as certain pottery and artifact types reveal their eastern origins.⁴ As in the preceding Archaic period the Plains remain a cultural margin--a periphery where even the practice of agriculture scarce eases the difficulties of survival. For a fuller understanding of the dawning agricultural horizon, let us look once again at the natural characteristics of the Southern Plains.

The climate of the Great Plains is one of extremes--extreme dryness, extreme cold, extreme heat, extreme winds. Rainfall decreases sharply from 40 inches in the eastern periphery to 15 or 18 inches in the western High Plains. Thus west of the 98th or 99th meridian nearly the yearly average of rain is required to produce a crop of corn (Wedel, 1941). Fortunately for the Indians, most of the yearly precipitation falls during the growing season; but then, as now, it might fall in five-inch downpours and run off before soaking into the ground. The difficulties of farming the Great Plains have not been solved even today, and a livelihood based on maize cultivation must have been precarious, to say the least, at a Neo-American level of technology. Undoubtedly it is for this reason that none of the Neo-American cultures of the Plains appear to have been based solely upon an agricultural economy. In every case hunting is almost of equal importance in securing food. Probably in drouth years the farmers became full-time hunters, and a series of drouth years might send whole communities trekking in search of greener fields. Wedel (1941) aptly characterized the Indian occupation of the western Plains as alternate settlement and abandonment. In understanding the Neo-American horticultural mode of life the following description of the historic Pawnee, taken from Wedel (1941), is illustrative.

Fundamentally, the native agriculture of the Great Plains was of southeastern type, with tillage mostly or entirely by the hoe. The old type of hoe consisting of a bison shoulder blade lashed to a bent or forked stick survived until very late times, being used side by side with iron tools supplied by traders. The fields--more accurately described as gardens--were small, ranging in size from 1/4 to 3 or 4 acres. No attempt was made to break out the tough sod of the uplands. In the valley bottoms, the plantings were confined to little patches of loose alluvial soil scattered along the creek banks or lying at the mouth of a ravine. Because such spots were usually limited in number, the women often found it necessary to travel from 5 to 10 miles to and from their gardens. Corn, beans, and squash were the principal crops, but sunflowers, tobacco, and watermelons were also grown. Women did all the planting and cultivating. Fertilizers were unknown and there is no evidence that irrigation was attempted.

Compared to certain eastern sections of the United States, very little is known about specific culture groups within the Southern Plains, but some important material has become available for this region in the past 10 years. I shall limit my discussion here to the Washita, Custer, Optima, Antelope Creek and Henrietta foci--all late prehistoric settlers on the Southern Plains.

The Washita River Focus (Bell and Barreis, 1951; Schmitt and Toldan, 1953)

The people of the Washita River focus lived in villages on the banks of the Washita River in central Oklahoma and possessed an economy based partly on hunting and partly on agriculture. They cultivated corn and beans, gathered wild foods and mussels, and hunted bison, deer, rabbits, turkeys, terrapins, turtles, and fish. Their houses were probably square in outline with 4 central roof supports. Characteristic house features were an extended entry passage, interior fire basin, cache pits, and walls of wattle and daub construction. The most common features of the village areas were circular pits containing an abundance of debris and broken artifacts. These were probably dug originally as storage or cache pits and later used as a convenient place to throw refuse. These pits average 3 to 5 feet in diameter, and 3 or 4 feet deep. A few burials have been found in flexed or semi-flexed position without grave offerings.

Bone artifacts are especially numerous in the Washita sites and include open-socketed bison scapula hoes, perforated digging stick points cut from bison tibiae, and bison skull hoes where the split horn core serves as a handle for the blade cut from the attached skull base. Other typical bone implements are awls, needles, beamers, arrowshaft wrenches, antler punches and flaking tools, and notched bones suggesting the musical rasp of historic Plains tribes. Also found are tubular bone beads, pendants, chisels and scrapers, fish hooks, highly polished animal mandibles of unknown use, and worked pieces of bone resembling the "counters" of later Indian gambling games.

Chipped flint objects include notched and unnotched arrow points in a variety of shapes, dart points, knives of both triangular and oval form, and diamond-shaped alternate-beveled knives. The latter type is typical of many Plains sites. There are many scrapers of several categories, snub-nosed, side and flake, and also flint drills.

Ground stone artifacts are grooved snadstone shaft smoothers, a few celts of greenish-black rock, small elbow pipes, simple pendants, grinding basins and mullers, hammerstones, and irregular pieces of hematite. Few shell artifacts are found.

The clay artifacts consist of small crude figurines, elbow pipes, perforated pottery discs, and pottery. Pottery is perhaps the most common article of Washita River sites. It is a gray or brown, crudely made, thick and poorly baked ware. A variety of tempering materials occur: crushed mussel shells, crumbled limestone, sandstone, bone, and some caliche, or a mixture of these.

Most of the pottery is plain but there is some cordmarked ware. Vessel shapes are primarily deep, globular jars with straight or flaring rims, and rounded base. Handles, lugs and applique designs were applied to the surface.

A house post from the Lacy site has yielded a radiocarbon date of 800 plus or minus 150 years ago for the Washita River focus.⁵

The Custer Focus (Bell and Barreis, 1951; Gallaher, 1951; Buck, 1959)

Farther west along the Washita River in central Oklahoma is the Custer focus, also known from village sites along the river terraces. Custer houses are irregularly shaped structures of wattle and daub with 4 center roof supports and central fireplaces. Burials so far excavated are flexed and contain grave offerings.

Custer pottery has been typed as Stafford Plain and Stafford Cordmarked and is very similar to Washita River pottery. The most common vessels are deep conical jars which have a small rounded or flattened base and flaring rim. Strap handles are attached. The use of caliche as a tempering material is distinctive for this complex.

Other artifacts are very similar to Washita River material.

The Optima Focus (Watson, 1950; Bell and Barreis, 1951)

The Optima focus is located on the North Canadian River in the Oklahoma Panhandle, and is known primarily from the Stamper site, though other sites in the same area probably belong to this focus. The Optima materials are very similar to those already reviewed for the Washita River and Custer foci. They also bear a close relationship to the Upper Republican aspect of Nebraska and Kansas. Perhaps the most distinctive feature of Optima is the architecture of the houses which shows decided Puebloan influences.

The Stamper village is located on the first terrace of the North Canadian River in an easily defended position, and consists of 12 single-unit one-storied houses. The house walls are constructed of a clay-plastered pole framework, reinforced with a base row of vertically-aligned caliche slabs set in a shallow trench. The caliche slabs are stabilized with adobe on the outside at the base. In some cases solid masses of adobe and large adobe blocks set in clay form the wall bases. The upper portion of the walls and the roof are then constructed of a pole framework covered with clay. Common house features are: hard-packed yellow clay floors at ground level or slightly below, unlined central firepits, and entryways extending from the center of one wall.

In economy and general way of life the Optima people were of the typical late prehistoric Plains type, with the usual bison scapula hoes, digging sticks of bison tibiae, grinding basins and handstones, diamond-shaped alternately-beveled knives, triangular arrow points, snub-nosed scrapers, etc. The pottery was exclusively utilitarian, grit-tempered, and all of one type--Stamper Cordmarked. The most common vessels are round-bottomed globular jars with straight or slightly outcurving rims and no handles.

The Antelope Creek Focus (Krieger, 1946; Suhm and Krieger, 1954)

Farther west in the Texas Panhandle north of Amarillo is the closely related Antelope Creek focus. Together the Antelope Creek and Optima foci form the Panhandle aspect as defined by Krieger. The Antelope Creek sites are composed of villages situated on ridges overlooking the Canadian River or its short tributaries. A wide view and defensive position appear to be more important than convenience to fields and water, suggesting the presence of warlike tribes on the Plains. The villages consist of multi-roomed one-storied pueblos, with scattered single-roomed houses also present.

As with Optima, the distinguishing feature of the Antelope Creek focus is the presence of masonry architecture, obviously borrowed from Puebloan groups. The predominant method of wall construction is to place two parallel rows of caliche slabs vertically in the ground, fill the intervening space with adobe and rubble, and set the next row of vertical slabs atop the fill in an offset manner. Another method, less common, is to build the walls of unshaped stones held together with liberal quantities of mortar. Most of the masonry, however, is confined to the lower portions of the walls, the upper walls and roof probably being finished with a jacal-like construction. The usual house features include: sunken central portions dividing floors into 3 almost equal sections, four center supports, circular plastered or stone-lined fire pits, long square masonry tunnels (18 to 30 inches square) beginning inside the rooms and extending east, large slabs serving as deflectors between tunnels and fire pits, occasional small anterooms or bins flanking the tunnels, slabs to cover the entrance hatches in the roofs, and occasional raised square clay banks or "altars" opposite the tunnels. Slab-lined oval or circular storage pits are common both inside and outside of the houses.

Except for architecture, the general traits and artifacts are similar to those of the other Plains groups herein discussed. The pottery is very similar to the Stamper Cordmarked of Optima, consisting mostly of globular round-bottomed jars with straight or slightly flaring rims. It is grit tempered and cordmarked all over the exterior surface.

The Antelope Creek and Optima foci are closely related, and both have been influenced by Puebloan contacts, Antelope Creek more than Optima. This Puebloan influence is seen especially in architecture--the presence of multi-roomed pueblos and masonry walls--and the presence of Puebloan sherds suggests trade between the two groups. Both Antelope Creek and Optima are related intimately to the Upper Republican aspect of Nebraska and Kansas, as evidenced by their cordmarked pottery and houses reminiscent of Central Plains pithouses. Possibly they represent a migration of Upper Republican people southward to the Panhandle region where they continued to practice their agricultural-hunting Plains way of life with slight local adaptations. Contacts with Puebloan groups in New Mexico resulted in some trade and in the borrowing of architectural ideas. For the main part they remain unaffected by Puebloan ideas. Krieger has dated the Antelope Creek focus at from 1300 to 1450 A. D.

The Henrietta Focus (Krieger, 1946; Suhm and Krieger, 1954)

Another late prehistoric Southern Plains groups flourished in north central Texas at the junction of the Clear Fork and Brazos Rivers. The Henrietta people also practiced the hunting and farming economy of the Plains. Their sites are located on large and small stream terraces with cache pits 2 to 3 feet deep a common feature of their villages. As yet there is no data on houses. The artifacts recovered from Henrietta sites are of the same general type as the other Plains groups, with a few distinctions. Some dart point survivals suggest an affiliation with the Edwards Plateau materials. Puebloan influence is suggested by the presence of true metates, used with a back-and-forth grinding motion. These far outnumber the rotary type milling stones, typical of other Plains groups, in Henrietta sites. Some small, thick, "greenstone" celts were probably imported from southwest Arkansas or southeastern Oklahoma, and indicate a relationship with the Caddoan area. There are a few trade sherds and obsidian chips obtained through trade with Puebloan groups. Further study in this vicinity can be expected to reveal important information concerning the eastward extensions of Puebloan people and the western connections of the Caddoan people. Suhm and Krieger suggest an age of from 1400 to 1600 A. D. for Henrietta, based on trade sherds from New Mexico. The focus probably began earlier than this, however, and was contemporaneous with the Fulton aspect of the Caddoan area.

The relationships of the Southern Plains complexes of late prehistoric times to each other and to groups outside the area are not clear. Much data is needed to fill in the gaps in our knowledge. A safe generalization is that all of these peoples migrated to their known locations from the east and north during Mississippi times. Certainly there is no evidence yet available for earlier agricultural occupation of the Southern

Plains. The relationship of the Antelope Creek and Optima foci to the Upper Republican aspect of Nebraska (Krieger, 1946; Watson, 1950) suggests a migration of Central Plains groups to the Panhandle where they settled down and followed their already developed mode of life. Bell (1958) thinks the occasional trade sherds and artifacts from the Gibson aspect found in Washita and Henrietta sites point to a migration of Caddoan people to the Plains, probably in late Gibson times. These Caddoans adopted a Plains way of life and radiated westward following the principal river valleys. The close similarities of Henrietta, Washita, and the Great Bend or Paint Creek (central Kansas) complexes, as well as the occurrence of certain Caddoan artifacts, indicate they are closely related to each other and may share an origin in the Caddoan area. The relationship of Caddoan and Plains cultures is further substantiated by the presence of several Plains traits in the Fulton aspect of the Caddoan area.

The Custer focus, also a typical Plains complex, may have evolved from a western Kansas focus, similar to the Keith focus of central Kansas and Nebraska, according to Buck (1959). The early Custer pottery is very similar to the Harlan ware of the Keith focus in every respect except temper. (The Custer people in Oklahoma adopted caliche, which was locally abundant, as a tempering material.) Custer pottery is also characterized by vessels with conoidal bases, another resemblance to the Keith focus. Contact with the Washita River complex resulted in an exchange of ideas whereby the Washita River people adopted some cordmarked pottery and the Custer people abandoned their conical vessels for globular jars. The relationship between Custer and Optima is still not clear, though they share many traits in common. Custer, Washita, and Optima were probably contemporaries--at least from 1300 to 1400 A. D. (Gallaher, 1951).

Other Groups

It is very probable that purely hunting groups, of whom we have no archeological evidence, wandered the southern High Plains during the Neo-American stage. Certainly the Pueblos at Optima and Antelope Creek were located with an eye for a wide view and a defensive position. Even proximity to water and cornfields were sacrificed for the defensible location. Since the Puebloan groups in New Mexico were confirmed pacifists, and other horticultural groups presumably too busy with their gardens to stage large-scale warfare, it seems certain that other tribes--migratory hunters and predators--lived in the Plains at this time. The existence of such tribes is confirmed by the Spanish accounts of "llaneros" or plainsmen, who possessed portable skin tepees, dog travois, and "no other settlement or location than comes from traveling around with the cows."

Quivira

With the passing from the scene of the Neo-American cultures described above comes a final break in the continuity of our prehistory. Coronado, searching for Quivira, and other early explorers have left tantalizing accounts of their first-hand meetings with certain tribes whose locations and movements can almost--but in many cases not quite--be iden-

tified. With respect to Quivira we are fortunate, as excellent studies by Wedel and others have demonstrated this golden kingdom to be the Big Bend Aspect of central Kansas, whose descendents are most certainly a branch of the historic Wichita. The "llaneros" who roamed the Plains hunting buffalo were undoubtedly eastern outposts of the Apache, later to be thrust from their domain by the irresistible Comanche. The fate of the Washita River, Custer and Henrietta groups is still not settled, though there is evidence that they evolved into historic Wichita groups, settling eventually in central Oklahoma. Additional evidence from archeology and more intensive studies of extant 16th and 17th century documents are needed to untangle the intricate relationships involved.

NOTES

1. This date was obtained by Magnolia Petroleum's Duncanville Research Laboratory near Dallas on mussel shells recovered from the Wood Pit site at the junction of Elam Creek and the Trinity River.
2. Terminology after Griffin (1952).
3. This date, also courtesy of Magnolia Petroleum's Duncanville Research Laboratory, is from a house post at the Lacy site in Central Oklahoma (Oklahoma Anthropological Society Newsletter, Vol. 8, No. 4).
4. Wedel (1941) reports the remains of Woodlands occupation underlying Upper Republican remains in Nebraska and Kansas. Bell and Barreis (1951) report the Cooper materials of northeastern Oklahoma represent the southernmost thrust of Woodlands influence from the Upper Mississippi Valley.
The cultures described in the Neo-American section of this paper are later in time than these materials and probably represent migrations of the Mississippi period.
5. See Note 3.

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THE MALAY CONCEPT OF "SELF"

Juanita Miller

Evidence from ethnographic material shows that the conception of the "self" varies widely among different peoples and it would seem likely that these different conceptions would be expressed in the structure of their languages. In attempting to delineate the "self"-view of the Malays, the pronominal category was chosen since it might be expected that the "self"-conception would be defined more clearly here than in any other form class of language, as it is this category that most intimately expresses the "self" and defines its relation to the world.

Traditionally, person, as used in grammar, has been defined as the person speaking (first person), the person spoken to (second person), and the person or thing spoken of (third person). Boas prefers to define person by means of the relationship between the categories: "Logically, our three persons of the pronoun are based on the two concepts of self and not-self, the second of which is subdivided, according to the needs of speech, into the two concepts of person addressed and person spoken of" (1938:144). Bloomfield refers to the first and second person as "personal" and the third person as "definite" (1933:225), and according to one school of thought, the third person is not a person at all, but is impersonal or objective. It is Boas' division into self and not-self that is most suggestive of the idea that in the pronominal system of a language we gain an insight into the way in which people view themselves in relation to other people and to the world.

That many languages see the personal-impersonal implication is shown by the fact that many languages have no pronoun of the third person, and many others make no distinction except for number in the verb for the third person. Other languages have definite pronouns of the first and second persons, but only a variety of demonstratives for the third.

The deictic (pointing) nature of the personal pronoun has been investigated by various linguists, and Gray is quoted by Forchheimer as pointing out: "Semantically, pronouns differ from nouns in that they are essentially deictic. They do not designate persons, things, concepts, or qualities in general (as do some nouns as man, stone, thought, goodness), but without limitation to any single category of ideas, they denote a specific individual or specific individuals of any category" (1953:10). In this way languages in general show an awareness of "self" and may be said to separate the personal "self" from the other and more impersonal nouns.

The Malay language, increasingly used over a wide area of South-eastern Asia, is one of the large groups of languages collectively

known as Malayo-Polynesian. This family of closely related languages spreads over an area of nearly nine thousand miles from Sumatra to Hawaii, and from Easter Island to New Zealand. Today Malay is the language of trade and communication throughout the East Indies and is spoken as the mother-tongue or as a secondary language by nearly thirty million people.

The parts of speech as understood in English do not exist in comparable form in Malay. The primary parts of Malay grammar are roots and affixes, but Malay does not make use of infixes. Words may consist of the root alone, roots joined to other roots or roots incorporating one or more affixes. The ideas expressed by the root are said to be both verbal and nominal but in the sense that "to be" is inherent in all, it would appear that a closer study might conclude that all Malay roots are of verbal origin. Along with the neighboring Polynesian languages, the Malay language is characterized by impersonal construction, third person address and passive verbal forms.

There is normally little to be construed from the position of the pronoun in the syntax of the Malay sentence, since the Malay has few iron-clad rules as to position and tends to construct sentences for emphasis, balance, and ellipsis. While the pronouns may, by position, receive emphasis, no special relationship to "self" should be inferred from this, since it is possible to emphasize any part of speech in this manner.

In Malay, as in other languages of the same group, there is neither conjugation or flexion in the verb. The particles added to the verb root give no indication of number, person, or gender, which are merely implied or defined by words outside the verb itself. The affixes only indicate whether the verb is active or passive, transitive or intransitive, contrary to the form of the Indo-European verb which is inflected for mode, tense, number, and person.

The personal pronouns of the first and second persons of the singular and of the second person of the plural are used only in familiar address. The Malay language is by nature impersonal, and in polite address the personal pronouns are usually replaced by nouns that have, through usage, become stereotyped until today they may be classed with the pronouns. There is also a series of pronominalized nouns used only in letters and literature. This avoidance of pronouns and the substitution of pronominal nouns suggests the Japanese usage of honorifics to imply a flattering degree of respect toward all whom one addresses in a more or less formal manner.

"Aloe" (which becomes "dakoe" after words ending in N or in a vowel) is used in the form of familiar address between equals, and is a true pronoun. In literature it is used after the manner of the editorial "we" in English.

Aloe balerm periksa.

I have not yet inquired.

Dia: aloe paekoel akan dia.

I hit him.

Since Malay is a language of many affixes, "akoe" is often abbreviated

to "loe" and used as both a prefix and a suffix. In its abbreviated form, it is often suffixed to titles used in a pronominal sense:

Toean-koe, Teng-koe or Toeng-koe = My lord.

Toean-koe: Ja, toean-koe, sjah'alam = Oh, my lord, ruler of the universe!

Since the first person singular pronoun "akoe" is offensive except between equals of some degree of familiarity, it is replaced by the use of impersonal forms of address, as:

Hamba, hamba-toean and di-per-hamba = slave or servant. These forms are used to nobles or, in a Japanese-like modesty, to equals.

Sahaja, from the Sanscrit "sahaya," meaning "companion," is in polite usage to or from anyone and is unlikely to cause offense.

Beta = slave, a self-abasing form used today only in letters but:

Oeloen = slave or subject, is a Javanese form in current usage.

The abbreviated personal pronouns, "koe," "moe," "nja" are used with the noun "awak" (body or person) to indicate the first, second, or third persons, and is a familiar or impolite form.

Kita (we, inclusive, first person plural), a true pronoun, is used in the singular as the royal "we," and another plural true pronoun:

Kami (we, exclusive) is a familiar substitute for "I," and is considered less abrupt than "akoe."

In the second person singular "engkau" or "angkau" (becoming dikau after words ending in N or in a vowel) is the regular pronoun for the second person singular. "Aug," "lang" and "kau" are dialectic variants. Like "akau", they are only used between equals or in literature. However:

Seqerti kata-moe toean = Just as you said, sir! is a highly respectful expression,

Entje, entji, is the polite form of address to people of the middle class in Malacca and Singapore.

Sahabat or sobat (companion, friend) is a convenient and polite way of addressing someone whose name is not known.

Handai, ande (companion, comrade), is more familiar and is used mostly in literature.

Toean (lord) is a common address to equals or strangers.

There is another series of semi-pronouns in common use for the second person singular based on kinship, real or pretended.

Adik	younger brother or sister
Kakak	elder brother or sister
Saudara	brother or sister
Abang	elder brother
'Pa, bapa	father
Ibo	mother
Pamanda	uncle

These are generally familiar, but are polite when applied to people whose age, compared to that of the speaker, makes such a relationship likely. This would seem to suggest a high degree of importance is attached to the relationship of "self" to the kin-group, and the fact that a normally familiar form of address becomes polite warrants the implication that the family is sufficiently important that to imply one belongs is complimentary.

The true third person singular (he, she, it) is "la" or "dia." They are one and the same, but "dia" is more often heard in spoken language and is more emphatic. As in the first and second persons, the true pronominal form of the second person is familiar or impolite, and various pronominal nouns are used in more polite discourse, as: "toean ini," "toean itoe," and "orang itoe." It is apparent that the "self" in the Malay language does not feel the necessity of differentiating on the basis of sex or animate or inanimate in the third person. In the semi-pronominal kinship terms also, one finds the same term applied to brother and sister alike, although elder brother, mother, and father are specific terms---perhaps because these categories are more important in the life of "self." There is also a suggestion that female siblings occupy lower positions status-wise, and are therefore, less important to "self."

In the first person plural of the Malay personal pronoun is found both an inclusive and an exclusive form. The use of these forms, found in many languages, would seem to indicate a more pronounced consciousness of "self" than is evidenced in English, since it is possible for the speaker to either include or exclude the person spoken to when speaking of "we."

Kita is used when the person spoken to is included, and kami is used when the person spoken to is not included.
For example:

Mari-lak kita ber-angkat dari sini = Let us (all) get away from here.

Kami datang men-dapat-kau toean = We have come to attend upon you.

Sometimes the noun "orang" (man) is added without changing the sense:

Kita orang = We folks, we all.

Kami orang = We people.

The true second person plural "kamoe" is used to servants, but is rather abrupt. However, its contracted form is often found in literature:

Ke-tahoe-i-lah oleh-moe = Let it be known to ye.

The forms "kowe" and "kweh" (Javanese) are both singular and plural, implying a lack of differentiation by "self" when speaking to one or more than one, as in English.

In the third person plural (they, them) "la" and "dia," the singular forms are used, but prefixed to the noun (dia-orang) the plurality is slightly emphasized.

In the personal pronoun system "self" is seen as self-effacing, impersonal, and almost ceremoniously polite to all but family and most familiar friends. There is a tendency at the same time to emphasize equality, and "self" is marked as class and rank conscious by the many honorific terms substituted for pronouns and in the special forms reserved for use by or to those of lower or higher rank, as:

Goea (first person singular) and loe (second person singular) reserved for the use of Chinese coolies.

Djongos (second person singular) used to servants.

Possession in Malay is expressed in two ways: (1) by placing the personal pronoun or one of the pronominal nouns after the noun naming the thing possessed, and (2) by placing "empoe-nja" (poenja) after the personal pronoun or pronominal noun:

My horse: koeda sahaja
koeda-koe
sahaja poenja koeda

However, the possessive pronouns are not used as much in Malay as in English, and are often omitted when possession is not emphasized, which might suggest that possession itself is of less importance to "self" than to his Western counterpart.

There are only two demonstrative pronouns in Malay and the distinction between them is similar to that speakers of English are accustomed to make. The same form serves for both the singular and plural, suggesting that that which is out of the immediate orbit of "self" is of less concern to him.

Ini = this, these (at hand or nearby)
Itow = that, those (more distant or out of sight)

The demonstrative pronoun follows the word it qualified:

Perahoe ini besat = This boat is big.

and when they are used adjectively, they are placed at the beginning of the sentence, but in a negative sense are placed last:

Sahaja tiada tahoe itoe = The Malay "self" does not say "I (do) not know that," but: "(To) me (is) not present that knowledge."

Two interrogative pronouns are found in Malay, "apa" and "mana" = "what," "which." The concept of "self" as a human being separated from the rest of the animal world and inanimate objects is manifest in the use of a special prefix "si" before "apa" to indicate persons and forming "who." Thus:

Apa nama-nja	What is its name, what do you call this?
Djalan nana jang paling baik	Which is the best road?

but:

Si-apa nama-nja	Who is he called?
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There are no indefinite pronouns in Malay, their place being taken by nouns, other pronouns, numerals, or their combinations, and there are no words corresponding to: no one, nobody, nothing. To express these meanings a negative construction must be employed. From this it might be hypothesized that the people using this language do not conceive of the world, and particularly human beings, as being indefinite; that to their minds there is no "nothing" or "nobody." Instead of saying: "No one paid any attention to him" they express the thought as a personal "they" or "people" did not pay him any attention.

"Orang," meaning "man" or "men" is also used in a very indefinite sense to mean "other," "others," etc., as:

Negeri orang	A foreign land, other people's country
Anak orang	Other people's children

This use of their word for "man" or "men" is interesting in view of the fact that in many languages the word corresponding to this conception in English is reserved for the members of the group, and words equivalent to "enemy" or "stranger" are applied to persons of other groups. The Navajo, for example, refer to themselves with classic simplicity as "dine," "The People," and classify all the rest of human-kind as outsiders.

Malay uses only one word to express the reflexive pronoun: "diri," which means "self." It may be combined with pronouns, nouns and with the prefix "se," to express "oneself": "sen-diri." "Diri" is apparently used only for animate beings, indicating, perhaps, a feeling that only living beings possess "self" and only such can react upon that "self."

The imperative is formed with the verb root and the suffix "-lah," and may be used in this form as:

Pergi-la	Go!
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However, it is considered somewhat abrupt and lacking in grace and polite auxiliaries are frequently used, in which case the suffix "-lah" may be dropped. These auxiliaries are usually the honorific semi-pronouns, as:

Sita-lan-lah toean doedoek	Please take a seat, sir!
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This look at the Malay pronominal system seems to indicate a "self"-concept typical of much of the Orient: a pseudo-humbleness in polite address with the imputation of superior status to the addressee, an impersonal relationship in speech to all but family and most familiar friends implying "self" to be kin- and family-centered without relating "self" to any large degree to outsiders, but at the same time, a strong sense of "self's" claim to status and a tendency to emphasize equality at times. This "self" would seem to be introspective and somewhat self-centered, and the weak pronouns of the third person indicate a lesser degree of interest the farther away one gets from "self." The third person is not differentiated for gender, number, or animate or inanimate, but the reflexive pronoun makes clear the animate-inanimate view of the world. There is nothing in this study to show how "self" views himself in relation to the physical world. It may be that "self" relates himself more strongly to persons than to the environment.

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CRAFT SURVIVALS AMONG THE SAUK INDIANS OF OKLAHOMA

Carl C. Ball¹

INTRODUCTION

The disappearance of the traditional native crafts of the Indian in Oklahoma is in direct proportion and coincident with the degree of integration of the Indian into the predominantly white culture of the area. Craft survival can be attributed to three principle factors--the Peyote cult, the commercialized dances and pow-wows, and the tourist demand for Indian-made articles. This last factor is primarily important only to the Plains tribes living in western Oklahoma.

In an effort to determine which crafts had survived, what factors influenced their survival, and the economic contribution of craft manufacture to family income, a preliminary survey of the Sauk Indian groups was undertaken in the fall of 1957. The Sauks live in two main groups in Lincoln and Pottawatomie Counties, Oklahoma, the northern group between Stroud and Cushing, the southern group near Aydelotte which is about eight miles northeast of Shawnee. In the course of the survey, some thirty Indian informants, together with a number of white merchants, in Shawnee, Stroud, and Cushing were interviewed.

The writer is very appreciative of the assistance given him by Thomas Morris of rural Stroud, Tom McClellan and Ed and Mary Mack of Aydelotte community, and Isadore and Mary Neal of Cushing who were the principal Indian informants. All of these people, incidentally, are active members of the Native American Church.

BRIEF HISTORY OF THE SAUK

The traditional home of the Sauk was probably the region around Saginaw Bay in the eastern peninsula of Michigan, from which they were expelled shortly before contact with the whites. Tradition states that the expulsion of the Sauk was at the hands of the Ojibway. The Sauk fled across Lake Michigan and settled on the east coast of Green Bay, Wisconsin. Here they soon came into conflict with the Menominee, and were forced to withdraw to the land along the Fox River where they were found by Father Allouez in 1667.

With the coming of the French, the Sauk and their allies, the Foxes, were again pushed southward where part of them located in what is now northwestern Illinois, and another group, mostly Fox, settled west of the Mississippi near the Des Moines River. The groups that stayed near the Mississippi became known as the "Sauk and Fox of the Mississippi" to distinguish them from a large band that in the latter part of the 18th century settled along the Missouri River, where they

were known as "Sauk and Fox of the Missouri."

In 1804, the Sauk and Fox of the Missouri signed a treaty at St. Louis which provided for the cession of tribal lands on both sides of the Mississippi. The friction which followed culminated in the Black Hawk War of 1831-32. Black Hawk, a Sauk leader, rallied his tribe and their allies to stand on their rights and remain in Illinois. Black Hawk was overwhelmed by American forces who were reinforced by Menominee and Santee Dakota warriors, and finally all the Sauk followed the pioneers of the tribe westward across the Mississippi, never to return.

The Sauk settled in what is now Iowa, where the tribal bands rallied to make war on the Sioux whom they defeated and forced out of that territory. By a series of treaties, all Sauk and Fox lands in Iowa, Nebraska, and Kansas were ceded to the United States with the exception of two tracts in Doniphan and Osage Counties in Kansas. Under the treaty of 1867, the Osage County tract was ceded to the United States in exchange for a reservation in Indian Territory where they arrived in 1869. The old Sauk and Fox Agency was located five miles south of Stroud, and a boarding school at the same location was opened in 1872. The Sauk and Fox were organized as the "Sac and Fox Nation" in the spring of 1885, and a written constitution and laws were adopted. In June, 1890, the reservation was ceded to the United States and allotments of 160 acres were made to each member of the nation, with the surplus lands being opened to white settlement.

The Sauk and Fox in Oklahoma are predominantly of Sauk descent. Mixed bloods are increasing through inter-marriage with whites and other Indian tribes. The discovery of oil in the Cushing field in 1912 brought wealth to those whose allotments were located in this region. However, in most instances, the wealth has long since been dissipated. The affairs of the tribe today are administered by the joint agency at Shawnee which is also responsible for the Kickapoo, Shawnee, Pottawatomie, and Iowa.

MATERIAL CULTURE

When the Sauk were still situated close to the Great Lakes, they shared the maritime culture of the Ojibway and Menominee, but with their withdrawal westward across the Mississippi, they came under prairie Indian influence. On the borders of the Plains, they came in contact with the bison and peoples of a predominantly bison economy. Bison hides took the place of bark, although in some cases the same forms of the articles were retained.

Probably the best description of the material culture of the Sauk is that contained in Skinner's "Observations on the Ethnology of the Sauk Indians," published as a bulletin of the Public Museum of the city of Milwaukee in 1925. The information on material culture was obtained by Skinner in 1922-23 in both Oklahoma and Kansas. Skinner's

observations were utilized by the writer as a guide in determining which of the crafts in existence some thirty-five years ago survive today.

Housing

Skinner noted (Skinner, 1925:124-126) that for summer use, the Sauk made large, square houses of elm bark with ridged roofs, often measuring 40-50 ft. in length and 30-35 ft. in breadth. Due to the difficulty in obtaining bark, other houses of exactly similar type were built of planks and sometimes had a bark roof. On each side of the lodge, a broad platform spread with reed mats extended the full length and was used both for storage of household utensils and as sleeping and sitting quarters. For winter use, the Sauk made small, round, dome-shaped lodges of cattail flag mats.

The Sauk today still erect summer houses of the type described by Skinner, but generally on a smaller scale. In addition, brush arbors are erected for cooking and eating purposes. While the older informants were aware of the type of winter house described by Skinner, they stated that they were no longer made.

Costumes

According to Skinner (Skinner, 1925:126-133), the dress of the men of the Sauk tribe was the most gorgeous of all the Central Algonkians, yet conformed to the general ancient patterns of the woodland tribes. Headdresses of otter fur, hawk skin, and buffalo which had formerly been worn were scarce in 1922. Elaborate roaches, woven from dyed deer's hair, turkey or porcupine quills, were highly prized. They were kept open by a carved spreader to which was attached an eagle plume which revolved upon its pivot in the breeze.

Necklaces or bands woven of yarn and beads, to which medicines in small leather bags were attached, were common. Breechcloths were made of broadcloth, the flaps of which were embroidered with beads in conventional floral or scroll figures. Garters were woven of yarn, yarn and beads, or beads alone, as were beaded belts, sashes, and shoulder bags. Moccasins had soft soles of one piece with the uppers, with a seam running over the instep backward from the toe. They had huge ankle flaps, or ears, heavily decorated with beadwork in designs of small geometric figures, preferably diamonds or triangles. Each flap of the same moccasin had a different design, but the designs were duplicated on the corresponding part of the other moccasin of the pair. Formerly, floral scrolls were utilized on one of the flaps of each shoe.

The women's clothing was comprised of a calico waist, ornamented with brooches of silver or nickel silver, and a skirt made of a square piece of broadcloth--black, blue, or scarlet--ornamented along the bottom and side borders with silk ribbon applique. The skirt was wrapped around the waist where it was held in place by a belt. The moccasins

were like those of the men, but were perhaps less boldly ornamented. The hair was braided and then wrapped in a cloth wrapper, the ends of which bore rectangular beaded ornaments and from the center of which a long streamer of beadwork was appended.

Of the various articles of clothing of the Sauk, the only two items which are still produced in any quantity are moccasins and women's skirts. The designs noted by Skinner are still used, and apparently the use of floral scrolls on one of the ears of each shoe has come back into fashion. In addition to the ear ornamentation, beadwork is also used to decorate the toe of the moccasin. Contrary to the fashion noted by Skinner, the women's moccasins are now more heavily ornamented than the men's. The women's skirts are made primarily for dances, and to a lesser degree for Peyote ceremonials. While the designs are still traditional, such modern innovations as zippers and elasticized bands, replacing the traditional belts, are being utilized.

Skinner notes that little was known or remembered about native-made shirts, but that in the years subsequent to the removal of the tribe across the Mississippi, deerskin shirts made in imitation of those of the Plains tribes were sometimes used. Kickapoo-type cloth shirts are sometimes used by the Sauk today, but it could not be determined whether they were evolved by the Sauks themselves or whether they were direct copies of purchased Kickapoo shirts. Most of the costumes of the male dancers who participate in pow-wows, etc., are purchased from members of the Plains tribes who specialize in the elaborately feathered dance costumes. Similarly, hard-sole Cheyenne moccasins are used by the dancers in place of their own soft-soled ones.

Woodworking

Wooden bowls and spoons were commonly used, mainly for ceremonial occasions, at the time Skinner investigated the Sauk. Wooden ladles or spoons are still being made, but only to a limited extent and usually for the use of the family of the maker. A number of families still possessed old southeastern-type mortars and pestles, but no informant knew of anyone capable of making such articles today.

Weaving

The Sauk, in common with most of the Great Lakes tribes, made twine for bags from the inner bark of basswood and cedar. Commercial yarn was also used for weaving belts, garters, and sashes. Mats made of reeds were used as floor and bench coverings in the houses. To the informants' knowledge, mats are no longer being made, since they are so easily obtained from the Kickapoo. Yarn articles are woven by the finger-weaving technique by at least two women; however, the writer strongly suspects that this is not a continuation of an old Sauk craft, but rather something learned at Chilocco or another government school.

Ceremonial Articles

Skinner states (Skinner, 1925:149) that it seems probable the Sauk have lost the art of making their own hollow log drums, since they now take a two-gallon wooden keg and stretch a piece of deerskin over it. The art of drum making has not been lost, and hollow-log type drums are being made today by at least one craftsman. In addition, the drummer turns out the large plywood-sided multiple player drums used in today's commercial pow-wows. The heads are no longer deerskin, but cowhide.

At least two makers, both men, turn out the gourds and feathers used at Peyote ceremonies. Both articles resemble those of the Plains, rather than the typical short unornamented rattles and fans of the Sauk as depicted by Skinner.

CONCLUSIONS

Of the three factors noted in the Introduction as contributing to craft survival, only the Peyote cult and the commercialized dances and pow-wows are of importance in relation to the Sauk. While a considerable amount of genuine Indian handmade trivia was available for sale in stores in neighboring communities, little of it was made by the Sauk. Pawn shops in the area seldom loan money on Indian made articles of clothing, fans, rattles, drums, etc., and even in the rare instances when they do, it can scarcely be considered as a steady source of income. An Indian operated craft shop was started at Stroud some years ago, but was forced to close its doors this past year due to lack of business. The store initially attempted to handle only locally made articles, but soon resorted to the standard tourist-trap merchandise of mass produced, so-called Indian handmade jewelry from the southwest, coffee-can drums made by the Cheyenne!, etc. The reluctance of the tourist to fully compensate the craft worker for his skill, time, and labor in making the bead, yarn, and leather work of the Sauk has not failed to produce a decline in craft article production. The younger people, with but few exceptions, refuse to produce any craft articles, since the return is insufficient to maintain even a minimum standard of living.

In the opinion of the writer, the introduction of the Peyote cult among the Sauk has contributed most to craft survival, and has even introduced new crafts, i.e., Peyote gourd and feather making. The soft-soled moccasins which are typically Sauk in form and ornamentation are made principally for use at Peyote meetings. It is interesting to note that most, if not all, of the individuals still practicing the surviving crafts are members of the Native American Church.

The economic contribution of crafts to the Sauk family income is almost nil. Indeed, the most productive of the craft makers are those individuals who are relatively secure economically and have sufficient spare time to devote to the exercise of their skill. Another factor which prevents more workers from producing craft articles is

the high cost of the raw materials such as beads, broadcloth, ribbon, feathers, etc., and the scarcity of deerskin. Of the craft workers who were interviewed, many were fully capable of producing articles, but were unable to procure the necessary supplies.

The future of the typical crafts of the Sauk is highly uncertain, since with one exception, all of the craft workers are middle-aged or beyond. As noted previously, the younger people are not interested in either learning to make or to produce craft articles. The one bright omen which the future holds is the increasing interest among the younger people in the Native American Church with its intensely Indian religion, which is reawakening a deep sense of pride in being Indian. The stimulus which Peyotism will provide craft production will not, however, be reflected in an increased number of articles for sale, since the ritual objects are generally made only for the individual who will use them in the ceremony, not for resale purposes.

NOTES

1. The editors were not able to obtain Mr. Ball's permission to print this article as he is overseas with the Armed Forces and they could not contact him.

THE POSSIBILITIES OF AN "EXPERIMENTAL LINGUISTICS"

Charles E. Cook

Linguistics, as a relatively new science, should be able to profit from the mistakes made by other disciplines, particularly experimental psychology. The most severe criticism one can make of experimental psychology is that in attempting to emulate the methods of physics and physiology, it has too often neglected the subject of its discipline--man. One can never know "What is man?" by isolating certain behavioral traits, running exhaustive tests on them, compiling huge statistical tables predicting their occurrence, but yet failing to view them as just a fractional part of the sum totality of the human being. Thus, linguistics should study not only language, but also how language and man are integrated as a whole and inseparable unit (Littlefield, 1960).

As a scientific discipline, linguistics has not suffered from a paucity of experimental proofs anymore than most of the other social sciences, and for that matter, some of the physical sciences. This general scarcity of proofs from the social sciences is in part due to previous fallacious notions as to what really constitutes science and experimentation. However, the purpose of this paper is not to present a suitable definition of science and of the experimental method, but to discuss some of the problems involved in attempting valid, objective (acceptable) demonstrations of hypotheses concerning linguistic phenomena.

A most important factor to be dealt with in the construction of experiments in the social sciences concerns the selection of subjects. These subjects are usually human beings, and the dependent variable in question is usually, in any of its innumerable manifestations, human behavior, at times seemingly a most independent "dependent variable." In most of the physical sciences, the dependent variables are always amenable to rather precise measurement or quantification. However, in linguistics, the dependent variables are usually amenable only to qualification--a preciseness of configuration or relationship, irrespective of dimensions (Whorf, 1956).

Occasionally in various psychological investigations, which are actually more physiological than psychological, such as "brightness" or "pitch discrimination," human beings serve as reliable subjects, but confront them with a test which delves into their conceptions of the world and of themselves, and a multitude of complex factors enters into their behavior. No linguistic investigation should fail to take into account the associational aspects, i.e., meaningfulness, affectivity, etc., of the independent variables.

That language and thought are closely identified or identical has been empirically supported by the investigations began by John B. Watson

in 1914 and later completed in 1932 by E. Jacobson (Woodworth and Schlosberg, 1956). Watson conceived of thought as consisting of slight muscular movements, especially (but not exclusively) speech movements. Thinking would thus be "subvocal speech," for the most part, and the best record of a thought process would be obtained by applying sensitive recording instruments to the speech organs. Early records obtained from such devices gave rather baffling results due to the insensitivity of the recording systems to the rapidity of silent speech movements. For this reason Watson was unable to determine the degree of similarity between actual speaking and subvocalization.

Jacobson approached the problem by recording on a galvanometer amplified action currents leading off from a muscle. While this is a much more sensitive indicator of slight motor activity, this method also fails to determine any degree of isomorphism between speech and subvocalization. Jacobson did, however, demonstrate that when a subject is given such tasks as silent recitation of a familiar poem or mental addition and multiplication, action currents sometimes appear in the tongue and lips, and sometimes elsewhere.

It would be interesting to examine the results of a replication of Watson's experiment using, however, a more sensitive and precise apparatus (if such exists). If it would be possible to record kymographically the patterns of muscular movement produced during speech and to compare them to those produced during thinking, a more conclusive demonstration of an identification between language and thought may be realized.

An experimental proof, of the more traditional sort, to demonstrate that language provides the framework for a sort of a "natural logic," in terms of which perception and conceptualization take place, might be constructed around the following general design:

The first step would be to look for and record rather close structural (morphemic) similarities among the individual lexical items of a language spoken by a specific pre-literate group, preferably non-Indo-European. These items should be of a nature such that their semantic similarities would not be easily apparent to say a native English speaker. This control is really not necessary to the success of the experiment qua experiment, but it would vividly illustrate to an English speaker (assuming the hypothesis is valid) the point the experiment is trying to make. An example of what is meant would be ni-l'eawa-'ko-n-a, which is translated, "pulling of a branch aside;" and ni-l'eawa-'ko-eite, which is translated, "I have an extra toe on my foot" (Whorf, 1956). To an English speaker, "pulling of a branch aside" and "I have an extra toe on my foot" obviously contain no logical similarity, but the Shawnee perceives ni-l'eawa-'ko-n-a and ni-l'eawa-'ko-eite as both classifying essentially the same phenomenon, e.g., "forked twigginess," which is a rough translation of the stem-morpheme l'eawa.

The second step is to graphically represent the semantic

content of each individual lexical item which has met with the criterion of morphemic similarity. This might be done on 'flash cards' or perhaps strips of motion picture film. The medium of graphic semantic representation would require a great amount of planning and research, and could well be the most difficult problem to overcome.

The independent variable is now ready to be presented to the subjects, who should be native speakers of the language under investigation. It would also be beneficial to the experiment if the subjects were naive of Western culture.

Each subject would individually judge the illustrated items as to inter-item similarity or sameness. One way to accomplish this might be found in the use of 'flash cards,' and to have the subjects sort them into groups which "seem to belong together."

If the 'flash cards' representative of the structurally similar words have a statistically significant tendency to be grouped together, the hypothesis is confirmed: Language provides a framework for a "natural logic," in terms of which perception and conceptualization take place.

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TENTATIVE CORRELATIONS OF OKLAHOMA
QUATERNARY DEPOSITS WITH THE ALLUVIAL CHRONOLOGY

Hubert C. Skinner

Introduction

The occurrence of certain well-stratified Quaternary alluvial deposits in western Oklahoma was brought to the attention of the writer in February, 1954, by Professor Robert E. Bell, Chairman of the Department of Anthropology, University of Oklahoma. In the hope that a tentative correlation could be effected with the alluvial chronology of Bryan (in Hairy, 1950, pp. 120-126), a preliminary study of these sediments was undertaken.

Cedar Creek, North of Carnegie, Oklahoma

Alluvial sediments of Quaternary age have been noted by Professor Bell, et al., in the vicinity of the Carnegie archeological site, secs. 1, 12 and 13, T 8 N, R 14 W, located on Cedar Creek (a tributary of the Washita River) in extreme eastern Washita County, Oklahoma, a few miles north and west of Carnegie, Caddo County, Oklahoma.

Considerable numbers of artifacts have been recovered from gravel and sand bars in the stream bed. These specimens include Folsom and Plainview points and later projectiles ranging to quite modern types. The later artifacts include Meserve, Scott's Bluff, "Eden-like" points and large, heavy dart points.

No artifacts are reported in situ from the alluvial fills; all are found loose in the stream gravel and sand bars. Cedar stumps have been recovered from Fill B and the bones of the modern form, Bison bison, are known from Fill C.

Three terrace levels are reported in the immediate area; however, at present, correlation with the alluvial fills is not attempted.

The following stratigraphic section is presented for the alluvial sediments of Cedar Creek:

Cedar Creek, Western Oklahoma, Washita County, Oklahoma

Fill C - Uniformly bedded; not nearly so compact as Fill B; 5-6 feet in thickness; apparently quite Recent in age; contains Bison bison bones.

- - - - - Disconformity - - - - -

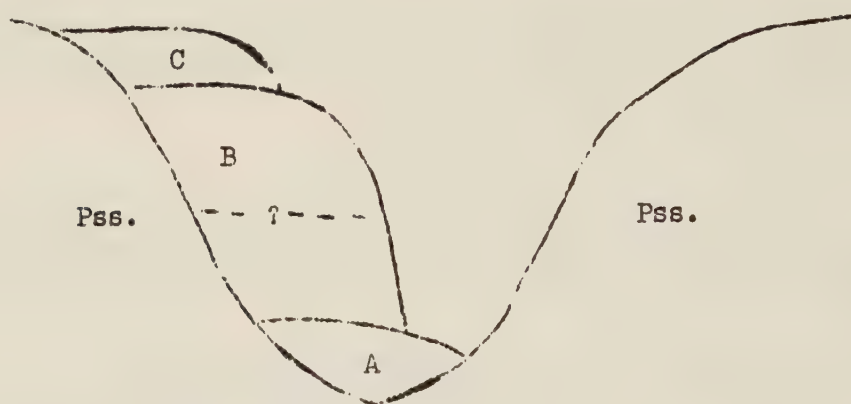
Fill B - Cross-bedded sands and gravels; fairly thick, quite "hard"

and compact, fluvial sediments; more leached than Fill C and somewhat gypsiferous in places; 25-30 feet in thickness; contains cedar stumps and logs.

- - - - - disconformity - - - - -

Fill A - Blue clay; apparently sterile (no fossils known); only a maximum exposure, though incompletely exposed (O.F. Evans, Personal Communication, June 8, 1954); probably underlain everywhere by red-beds of Permian age; possibly deposited under moist, swampy conditions similar to those of Bryan's No. 1 Fill.

The sketch which follows is a diagrammatic composite view of the three fills and their apparent relationship to the underlying Permian red sandstones:



Composite Section of Cedar Creek

The following stratigraphic section outlines the type alluvial chronology of Bryan (1941) and includes tabulated data concerning suggested correlatives from surrounding areas (Bryan, et al.).

THE ALLUVIAL CHRONOLOGY

Late Alluvium - - Deposited in a channel, generally resembling the modern gulch or arroyo in size and shape, eroded in the older strata; contained beds are loose and friable.

No. 3 Fill

Chaco Canyon - Late Pueblo Bonito pottery, c. 1200 AD; channel probably cut c. 1250 AD; filled by 1400 AD; but continuing to about 1885 AD when modern channels began forming.

Hopi Area, Arizona - Naha formation, a similar, filled channel with pottery.

Big Bend, Texas - Kokernot formation, a similar, filled channel.

White Water Draw - "upper silts" - channel fill with pottery made after 1100 A. D.

Erosional Period - c. 1250-1300 A.D., a dry time, corresponding to the great drouth in the southwest (known from tree ring studies); (Bryan, 1941).

Intermediate - - - Deposited disconformably above the older alluvium under drier conditions; contains, in places, humic layers, relatively uncemented or weathered; resembles closely modern stream deposits; contains no extinct animals.

No. 2 Fill

*Big Bend, Texas - Calamity formation, divided into a younger and older portion by a secondary disconformity; San Jose culture and Maravillas type artifacts at the base; Santiago type artifacts near the top of the lower Calamity.

*Hopi Area, Arizona - Tsegi formation, divided into a younger and older portion by a secondary disconformity;

Whitewater Draw (of Antevs) - A two-fold alluvial formation; upper portion contains artifacts of San Pedro stage of the Cochise culture with a definite channel at the base; lower portion contains manos of Chiricahua stage of the Cochise culture.

(*The upper and lower portions of the Calamity and Tsegi formations cannot be separated on geologic criteria except under quite favorable circumstances.)

Erosional Period - Stream cut great gullies or arroyos; extensive wind action is characteristic of this period of erosion; a dry, warm period following last glacial advance; c. 2500 B. C. - 5500 B. C. (Bryan, 1941, p. 125).

Older Alluvium - - Deposited in the last important time of "wetter" climate and presumably equivalent to the Corral Creek (W III) stage of the Wisconsin glaciation; somewhat more compact than younger units; contains soil horizons, swampy deposits, invertebrate shells (evidence of moist conditions of deposition); at many places contains bones of mammoths (evidence of some antiquity and a generally denser vegetation than now obtains).

No. 1 Fill

10,000-25,000 +
B.P.

Big Bend, Texas - Neville formation, extinct horse and mammoth.

Northern Arizona - Jeddito formation.

Abilene, Texas - Durst silt, containing mammoth bone, mano, folsomoid point, "drill"; "Gibson" points occur just below the unconformity at the top of this unit.

Lynn County, Texas - Tahoka clay, with Bison taylori, mammoth, Equus, Camelops, Glyptodon, Plainview points.

Whitewater Draw - an alluvial deposit; manos, metates of Sulphur Springs stage of the Cochise culture.

- - - - -disconformity with the older strata - - - - -

Conclusions

The problem and inherent difficulties in dating archeological sites and the necessity for establishing useful chronologies and detailed stratigraphic sections to aid the archeologist in establishing dates are recognized. This brief paper is presented as a tentative and preliminary report in order to provide others with a check list which can be used for comparison with new data as they become available.

The correlations shown in the following charts are suggestions only and are doubtlessly far too simplified---i. e., precise correlations of locally developed continental sediments are not generally to be expected to coincide neatly with no overlapping or variance in time-span. Therefore, with the acquisition of new data and additional artifacts, revisions are both expected and invited.

If these correlations are correct then the Folsom and Plainview projectile types can be expected to occur in situ within the Blue Clay of Fill A and the radioactive Carbon 14 dating of the cedar stumps of Fill B should fall within the interval of 700-4450 years B. P. in the Cedar Creek-Carnegie site area.

TABLE I.

CORRELATION CHART

Page 1

1) Culture Periods		2) Glacial Chronology	3) Alluvial Chronology (Bryan, 1950)	4) Western Oklahoma Cedar Creek
COCHISE CULTURE COMPLEX	Pueblo-- Hohokam	P O S T - G L A C I A L T I M E	Late Alluvium No. 3 Fill c. 1300-1885 AD	Fill C Uniform sand
	San Pedro		Late Pueblo Bonito Pottery at Chaco Canyon E R O S I O N A L I N T E R V A L c. 1250-1300 AD	<u>Bison bison</u>
	Chiricahua		I n t e r m e d i a t e No. 2 Fill c. 2500 BC to 1250 AD upper part lower part	Fill B Cross-bedded sands and gravels
	Sulphur Springs		Older Alluvium No. 1 Fill 10,000 to 25,000 B.P.	Fill A Blue Clay

TABLE I.

CORRELATION CHART

Page 2

Alluvial Chronology (Bryan) 3)	Big Bend, Texas (Albritton- Bryan, 1939) 5)	Northern Arizona (Hack, 1942) 6)	Whitewater Draw (Sayles and Antevs) 7)
Late Alluvium No. 3 Fill	Kokernot	Naha *pottery	Alluvium C *pottery (post- 1100 AD)
e r o s i o n a l i n t e r v a l			
Intermediate Alluvium No. 2 Fill upper part lower part	Calamity *Santiago *Maravillas *San Jose	Tsegi	Alluvium B *San Pedro *Chiricahua
e r o s i o n a l i n t e r v a l			
Older Alluvium No. 1 Fill	Neville fm. horse mammoth	Jeddito fm.	Alluvium A manos metates *Sulphur Springs

*Cultural Elements

TABLE I.

CORRELATION CHART

Page 3

3) Alluvial Chronology (Bryan)	8) High Plains, Texas (Huffington- Albritton, 1941)	9) Lynn Co., Texas	10) Abilene, Texas
Late Alluvium No. 3 Fill	Monahans fm. 6-30 feet		
e r o s i o n a l i n t e r v a l			
Intermediate Alluvium No. 2 Fill	upper part		
	lower part	Judkins fm. 6 1/2 feet	
e r o s i o n a l i n t e r v a l			
Older Alluvium No. 1 Fill		Tahoka clay <u>Bison taylori</u> mammoth <u>Equus</u> <u>Camelops</u> <u>Glyptodon</u> *Plainview	Durst silt mammoth manos *Folsomoid *"Gibson"

*Cultural Elements

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